

WHAT IS CLAIMED IS:

- 1 1. An isolated nucleic acid encoding a vertebrate translation initiation factor
- 2 4AIII (eIF-4AIII) having an amino acid sequence substantially homologous to that of
- 3 SEQ ID NO:2.

- 1 2. The isolated nucleic acid of Claim 1 wherein the amino acid sequence is SEQ
- 2 ID NO:2 or SEQ ID NO:2 with a conservative amino acid substitution.

- 1 3. The isolated nucleic acid of Claim 2 wherein the nucleic acid contains the
- 2 coding sequence of SEQ ID NO:1.

- 1 4. The isolated nucleic acid of Claim 1 further comprising an heterologous
- 2 nucleotide sequence.

- 1 5. The isolated nucleic acid of Claim 4 wherein the heterologous nucleotide
- 2 sequence encodes a fusion protein or fusion peptide.

- 1 6. The isolated nucleic acid of Claim 1 operatively linked to an expression
- 2 control sequence.

- 1 7. A unicellular host transformed or transfected with the nucleic acid of Claim 6.

- 1 8. A method of expressing the eIF-4AIII comprising culturing the unicellular host
- 2 of Claim 7 in an appropriate cell culture medium under conditions that provide for
- 3 expression of the protein by the cell.

- 1 9. The method of Claim 8 further comprising the step of purifying the eIF-4AIII.

- 1 10. The purified form of the eIF-4AIII obtained by the method of Claim 9.

- 1 11. An isolated nucleic acid containing 15 or more nucleotides that hybridizes to
2 SEQ ID NO:1 under standard hybridization conditions.
- 1 12. The isolated nucleic acid of Claim 11 that hybridizes to nucleotides 1 to 90 of
2 the coding region of SEQ ID NO:1 under standard hybridization conditions.
- 1 13. An isolated vertebrate translation initiation factor 4AIII (eIF-4AIII) having an
2 amino acid sequence substantially homologous to that of SEQ ID NO:2.
- 1 14. The isolated eIF-4AIII of Claim 13 having the amino acid sequence of SEQ ID
2 NO:2 or SEQ ID NO:2 with a conservative amino acid substitution.
- 1 15. The isolated eIF-4AIII of Claim 13 containing the amino acid sequence of
2 SEQ ID NO:4.
- 1 16. The isolated eIF-4AIII of Claim 13 having a detectable label.
- 1 17. A proteolytic fragment of the isolated eIF-4AIII of Claim 13.
- 1 18. A chimeric protein comprising a fusion protein or peptide and the proteolytic
2 fragment of Claim 17.
- 1 19. A chimeric protein comprising a fusion protein or peptide and an eIF-4AIII
2 having an amino acid sequence substantially homologous to that of SEQ ID NO:2.
- 1 20. An antibody to an isolated vertebrate translation initiation factor 4AIII (eIF-
2 4AIII) having an amino acid sequence substantially homologous to that of SEQ ID
3 NO:2.
- 1 21. The antibody of Claim 20 that binds amino acids 1-30 of SEQ ID NO:2.

- 1 22. The antibody of Claim 21 which is a monoclonal antibody.
- 1 23. A method for identifying a potential drug that modulates the ability of the eIF-
2 4AIII of Claim 13 to induce the transcription of epidermal markers comprising:
3 (a) injecting an mRNA encoding the eIF-4AIII into an animal pole of a 2-
4 cell stage embryo in the presence of an agent;
5 (b) isolating the animal pole explant at the late blastula stage;
6 (c) culturing the animal pole explant until the midneurula stage;
7 (d) extracting the RNA from the animal pole explant;
8 (e) assaying for the transcription of an epidermal marker protein; and
9 (f) comparing the amount of transcription in the presence of the agent
10 relative to in its absence; wherein an agent that enhances or diminishes said
11 transcription relative to in its absence is identified as a potential drug that modulates
12 the ability of the eIF-4AIII to induce the transcription of epidermal markers.
- 1 24. The method of Claim 23 wherein said assaying the transcription of the
2 epidermal marker is performed by reverse transcriptase polymerase chain reaction.
- 1 25. The method of Claim 23 wherein the 2-cell stage embryo is a xenopus embryo.
- 1 26. The method of Claim 23 wherein the animal pole explant is dissociated for 2-6
2 hours and then reaggregated prior to said culturing of step (c).